



The ACRIDICON-CHUVA observational study of tropical convective clouds and precipitation using the new German research aircraft HALO

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An extensive airborne/ground-based measurement campaign to study tropical convective clouds is introduced. It was performed in Brazil with focus on the Amazon rainforest from 1 September to 4 October 2014. The project combined the joint German-Brazilian ACRIDICON (Aerosol, Cloud, Precipitation, and Radiation Interactions and Dynamics of Convective Cloud Systems) and CHUVA (Machado et al. 2014) projects. ACRIDICON aimed at the quantification of aerosol-cloud-precipitation interactions and their thermodynamic, dynamic and radiative effects in convective cloud systems by in-situ aircraft observations and indirect measurements (aircraft, satellite, and ground-based). The ACRIDICON-CHUVA campaign was conducted in cooperation with the second Intensive Operational Phase (IOP) of the GOAmazon (Green Ocean Amazon) program. The focus in this presentation is on the airborne observations within ACRIDICON-CHUVA. The German HALO (High Altitude and Long-Range Research Aircraft) was based in Manaus (Amazonas State); it carried out 14 research flights (96 flight hours in total). HALO was equipped with remote sensing and in-situ instrumentation for meteorological, trace gas, aerosol, cloud, and precipitation measurements. Five mission objectives were pursued: (1) cloud vertical evolution (cloud profiling), (2) aerosol processing (inflow and outflow), (3) satellite validation, (4) vertical transport and mixing (tracer experiment), and (5) clouds over forested and deforested areas. The five cloud missions collected data in clean atmospheric conditions and in contrasting polluted (urban and biomass burning) environments.